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## Effect of different organic fertilizer on growth and yield of brinjal (*Solanum melongena* L.) cv. Manjari Gota

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### Abstract

The present study was conducted to evaluate the effect of different organic fertilizers on growth and yield of brinjal (*Solanum melongena* L.) cv. Manjari Gota. The results revealed that treatment T<sub>7</sub> (100% RDF + FYM 5 t/ha) recorded highest plant height (69.76 cm, 55.36% increase over the control), highest number of branches per plant (16.50, 120% increase over the control), highest number of leaves (72.37, 63.28% increase over the control), minimum days required for first flower to appear on plant (48.15 days), minimum days required for 50 per cent flower to appear on plant (61.48 days) and more number of flowers per plant (65.59), minimum days required for first harvesting of brinjal (82.77 days), maximum individual fruit weight (69.68 g, 18.20% increase over the control), maximum fruit length (10.52 cm, 42.93% increase over the control), diameter of fruit (5.70 cm, 38.68% increase over the control), maximum number of fruits per plant (23.92, 102.88% increase over the control), highest yield of fruits per plant (1.45 kg, 110.14% increase over the control), highest yield of fruits per plot (103.17 kg, 106.83% increase over the control) and high yield of fruits per hectare (225.58 q/ha, 106.19% increase over the control) as compared with other different organic fertilizer treatments.

**Keywords:** Organic fertilizers, growth, yield, brinjal, Manjari Gota

### Introduction

Brinjal or egg plant (*Solanum melongena* L.) of the family Solanaceae is one of the important and popular vegetable crops grown in India and other parts of the world. It is essentially a warm weather crop grown extensively in India. Various sizes, shapes, colours and forms of cultivated as well as wild type of brinjal are found in India. White brinjal is said to be good for diabetic patients. Taking brinjal fried in til oil can cure tooth ache. It has also been recommended as an excellent remedy for those suffering from liver complaints (Chauhan 1981)<sup>[4]</sup>.

Inorganic fertilizers are very high in cost and has become impractical to apply by small and marginal farmers. Inorganic fertilizers are harmful both soil and beneficial bacteria which is most important for both soil and growing of the crops, regular use of the inorganic fertilizers decreases the beneficial bacteria in the soil and soil fertility. Using of organic fertilizers serves as a good and suitable source to supply soil food elements. Among the organic manures, vermicompost is one of the best organic manures in increasing the crop yield. It contains growth regulators like growth hormones which increase the growth and yield of crops. Compost plays an important role for improving soil physical properties and contains higher levels of relatively available nutrient elements, which are essential for plant growth. The main aim of the investigation was to find out the effect of organic manures and bio fertilizers on growth and yield of brinjal. The chemical fertilizers should be replaced with the natural and organic fertilizers which can play a key role of the conservation of the environment.

### Materials and methods

An experiment was conducted at Organic Farming Research and Training Centre, Vasantrya Naik Marathwada Krishi Vidyapeeth, Parbhani during Rabi season of 2019-20. The experiment was laid out in randomized block design with 8 treatments and each replicated thrice. The treatments involved were T<sub>1</sub> (RDF 100% through FYM, T<sub>2</sub> RDF 50% through FYM + 50% through vermicompost, T<sub>3</sub> RDF 100% through FYM + Jeevamrut (3 application), T<sub>4</sub> RDF 50% through FYM + Jeevamrut (5 application) T<sub>5</sub> RDF 50% through vermicompost + Jeevamrut (5 application), T<sub>6</sub> (RDF 100%

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through vermicompost + Jeevamrut (5 application), T<sub>6</sub> (RDF 100% through vermicompost + Biofertilizers 2.5 lit/ha (Azatobacter and phosphate solubilizing bacteria (PSB) T<sub>7</sub> RDF 100% + FYM 5 ton/ha, T<sub>8</sub> control. Where RDF is recommended dose of fertilizers. The plot size was 7.2 m x 6.3 m and spacing followed was 120 cm x 45 cm. All cultural practices were followed regularly during crop growth and observations were recorded on growth characters i.e., plant height, number of branches per plant, number of leaves per plant, flowering parameters like days to first flowering, days to 50 per cent flowering, number of flowers per plant and fruit parameters like weight of individual fruit (g), length of fruit (cm), diameter of fruit (cm), yield parameters like days to first harvesting, number of fruits per plant, yield of fruit per plant (kg), yield of fruit per plot (kg), yield of fruit per hectare (q/ha).

### Results and discussions

The vegetative growth parameters like plant height, number of branches per plant and number of leaves per plant at maturity were influenced significantly due to different treatments. Overall vegetative parameters were influenced due to application of nutrient through combination of organic manures and recommended dose of fertilizers were proved beneficially for increasing growth of brinjal crop. The maximum vegetative growth of plant height at 120 DAP (69.76 cm, 55.36% increase over the control) was noticed in the treatment T<sub>7</sub> receiving RDF 100% + FYM 5 t/ha. The similar findings were also reported by Agrawal and Sharma (2014) [1] in brinjal. Maximum number of branches per plant at 120 DAP (16.5, 120% increase over the control) was recorded in the treatment T<sub>7</sub> receiving RDF 100% + FYM 5 t/ha. These findings are in close conformity with the findings of Altaf *et al* (2019) [2]. Maximum number of leaves at 120

DAP (72.37, 63.28% increase over the control) were recorded in the treatment T<sub>7</sub> receiving RDF 100% + FYM 5 t/ha. The similar results were reported by Altaf *et al.* (2019) [2] and Suge *et al.* (2011) [9]. The result indicated that the organic manures along with recommended dose of fertilizer showed better response in terms of increase in plant height, number of branches and number of leaves as compared to organic manures only. The better efficiency of organic manures in combination with inorganic fertilizers might due to the fact that the organic manures would have provided congenial of soil physical condition and the micronutrients in an optimum range to the plants.

Among the different treatments minimum days to first flower appearance (48.15 days) was noticed under treatment T<sub>7</sub> (100% RDF + FYM 5 t/ha). It might be possible due to availability of nitrogen, phosphorous and potassium in easier and available form through FYM and recommended dose of fertilizer at early stage of life of plant which it helps in foliage growth and early flowering in brinjal. The results are in close conformity with the findings of Altaf *et al.* (2019) [2] in chilli. Minimum (61.48) days to 50 per cent flowering was found under the treatment T<sub>7</sub> (RDF 100% + FYM 5 t/ha). Earliness in flowering is due to the nutrient through FYM and recommended dose of fertilizer which increased physiological activity in plant and storing food material for differentiation of buds into flower. These findings also supported by Ogundare *et al.*, (2015) [7] in tomato. More number of flowers (65.59) was recorded in treatment T<sub>7</sub> (RDF 100% + FYM 5 t/ha). It might be possible due to the more number of flower take place as proper nutrient required for flower formation which leads to more number of flower initiation than other treatment. These results are in close conformity with the findings of Ogundare *et al.* (2015) [7] in tomato and Patel *et al.* (2018) [8] in okra.

**Table 1:** Effect of different organic fertilizers on plant height (cm), number of branches per plant, number of leaves per plant, days to first flowering, days to 50% flowering and number of flowers per plant of brinjal.

Sr. No.	Treatment details	Plant height (cm)	No. of branches/ plant	No. of leaves/ plant	Days to first flowering	Days to 50% flowering	No. of flowers/ plant
T <sub>1</sub>	RDF 100% through FYM	56.53	10.65	60.42	49.36	62.45	63.16
T <sub>2</sub>	RDF 50% through FYM + 50% through vermicompost	62.53	13.32	64.32	48.74	62.40	64.20
T <sub>3</sub>	RDF 100% through FYM + Jeevamrut (3 application)	59.26	11.43	62.43	49.14	62.39	63.55
T <sub>4</sub>	RDF 50% through FYM + Jeevamrut 5 application	50.5	9.03	53.52	50.81	62.59	62.50
T <sub>5</sub>	RDF 50% through vermicompost + Jeevamrut 5 Application	54.86	10.33	58.33	50.13	62.54	62.59
T <sub>6</sub>	RDF 100% through vermicompost + biofertilizer 2.5 lit/ha (Azatobacter and PSB)	64.83	13.61	66.40	48.34	62.30	64.25
T <sub>7</sub>	RDF 100% + FYM 5 t/ha	69.76	16.5	72.37	48.15	61.48	65.59
T <sub>8</sub>	control	44.9	7.50	44.32	52.31	63.39	59.59
	S.E.(m)±	0.61	0.21	0.30	0.65	0.30	0.20
	CD @ 5%	1.84	0.66	0.91	1.96	0.91	0.63

The fruit parameters like average fruit weight, length of fruit, diameter of fruit was influenced significantly by the recommended dose of fertilizer supplied through different organic manures in different treatments which were recorded after harvesting of fruits. The maximum individual fruit weight (69.68 g, 18.20% increase over the control), fruit length (10.52 cm, 42.93% increase over the control), fruit

diameter (5.70 cm, 38.68% increase over the control) were recorded with treatment T<sub>7</sub> (RDF 100% + FYM 5 t/ha). The above results indicated that the application of NPK along with organic fertilizer increased individual fruit weight, fruit length and fruit diameter. Same results were also reported by Anuburani *et al.* (2003) [3] in brinjal and Harikrishna *et al.* (2003) in chilli.

**Table 2:** Effect of different organic fertilizers on fruit and yield parameters of brinjal.

Sr. No.	Treatment details	Individual fruit weight (g)	Length of fruit (cm)	Diameter of fruit (cm)	Days to 1 <sup>st</sup> harvesting	Number of fruits/ plant	Yield/plant (kg)	Yield/plot (kg)	Yield/ha (q)
T <sub>1</sub>	RDF 100% through FYM	64.29	8.26	4.50	85.23	16.19	1.04	74.94	165.29
T <sub>2</sub>	RDF 50% through FYM + 50% through vermicompost	65.99	8.93	5.08	84.15	17.23	1.13	82.54	181.32
T <sub>3</sub>	RDF 100% through FYM + Jeevamrut (3 application)	65.51	8.40	4.71	84.59	16.90	1.10	79.20	173.77
T <sub>4</sub>	RDF 50% through FYM + Jeevamrut 5 application	62.20	7.48	4.25	85.55	15.44	0.96	69.57	152.95
T <sub>5</sub>	RDF 50% through vermicompost + Jeevamrut 5 Application	63.80	7.96	4.30	85.38	16.04	1.02	73.44	161.07
T <sub>6</sub>	RDF 10% through vermicompost + biofertilizer 2.5 lit/ha ( <i>Azotobacter</i> and PSB)	66.62	9.42	5.30	83.81	17.75	1.18	85.99	189.54
T <sub>7</sub>	RDF 100% + FYM 5 ton/ha	69.68	10.52	5.70	82.77	23.92	1.45	103.17	225.58
T <sub>8</sub>	control	58.95	7.36	4.11	88.41	11.79	0.69	49.88	109.40
	S.E.(m)±	0.26	0.30	0.17	0.39	0.36	0.09	0.26	0.52
	CD @ 5%	0.80	0.91	0.52	1.18	1.09	0.29	0.80	1.59

**Table 3:** Effect of different organic fertilizers on plant height (cm), number of branches, number of leaves, number of fruits, individual fruit weight, fruit length, fruit diameter, yield per plant, yield per plot, yield per hectare. (Percent increase over the absolute control)

Sr. No.	Treatment details	Plant height (cm)	No. of branches	No. of leaves	No. of fruits	Individual fruit wt (g)	Fruit length (cm)	Fruit diameter (cm)	Yield / plant (kg)	Yield/plot (kg)	Yield/ha (q)
T <sub>1</sub>	RDF 100% through FYM	25.90	42.00	36.32	37.31	9.05	12.22	9.48	50.72	50.24	51.08
T <sub>2</sub>	RDF 50% through FYM + 50% through vermicompost	39.26	77.60	45.12	46.14	11.94	21.33	23.60	63.76	65.47	65.74
T <sub>3</sub>	RDF 100% through FYM + Jeevamrut (3 application)	31.98	52.40	40.86	43.34	11.12	14.13	14.59	59.42	58.78	58.83
T <sub>4</sub>	RDF 50% through FYM + Jeevamrut (5 application)	12.47	20.40	20.75	30.94	5.51	1.63	3.40	39.13	39.47	39.80
T <sub>5</sub>	RDF 50% through vermicompost + Jeevamrut 5 application	22.18	37.73	31.61	36.04	8.22	8.15	4.62	47.82	47.23	47.23
T <sub>6</sub>	RDF 100% through vermicompost + Biofertilizer 2.5 lit/ha ( <i>Azotobacter</i> and PSB)	44.38	81.46	49.81	50.55	13.01	27.98	28.95	71.01	71.99	73.25
T <sub>7</sub>	RDF 100% + FYM 5 t/ha	55.36	120	63.28	102.88	18.20	42.93	38.68	110.14	106.83	106.19

(\* RDF- recommended dose of fertilizers.)

The yield parameters like days to first harvesting, number of fruits per plant, yield per plant (kg), yield per plot (kg), yield per hectare (q) influenced significantly with different treatments which were recorded after harvesting of fruits. The minimum (82.77) days to first harvesting was recorded with treatment T<sub>7</sub> (100% RDF + FYM 5 t/ha). Earliness in fruit picking in FYM loaded treatment could be attributed to enhanced vegetative growth coupled with adequate reserved food material which facilitated early differentiation of vegetative bud, flowering and subsequently early harvesting of fruits. These findings are supported with results of Dixit *et*

*al.*, (2018) in tomato. The maximum number of fruits per plant (23.92, 102.88% increase over the control), yield per plant (1.45 kg, 110.14% increase over the control), yield per plot (103.17 kg, 106.83% increase over the control), yield per hectare (225.58 q/ha, 106.19% increase over the control) were recorded with the treatment T<sub>7</sub> (100% RDF + FYM 5 t/ha). This may be due to vigor of plant and more number of fruit by the combined application of organic manure and bio fertilizers. The results are in close conformity with the findings by Suge *et al.* (2011)<sup>[9]</sup>, Harikrishana *et al.* (2002)<sup>[6]</sup> in brinjal.

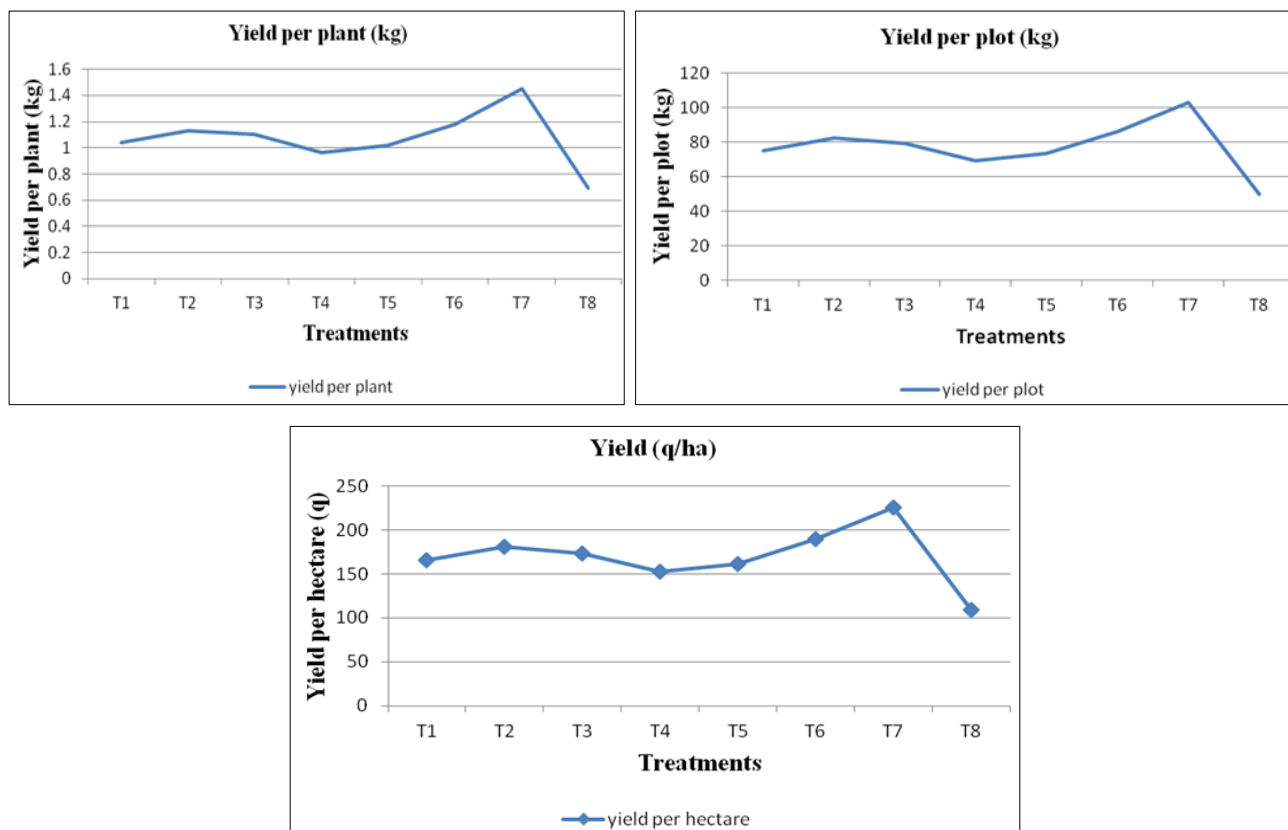


Fig 1: Treatment details

## Conclusion

from the above findings it is concluded that treatment T<sub>7</sub> (100% RDF + FYM 5 t/ha) is best for getting maximum number of fruits per plant, maximum yield per plot, maximum yield per hectare which is the main objective of any research work.

## References

1. Agarwal S, Sharma J. Agronomic impact of earth worms, cow dung compost, vermicompost and chemical fertilizers on growth and yield of brinjal (*Solanum melongena*). International Journal of Environment Engineering. 2014;6(3):1-4.
2. Altaf MA, Shahid R, Altaf MA. Effect of NPK, organic manure and their combination on growth, yield and nutrient uptake of chilli (*Capsicum annum* L.) Horticulture International Journal. 2019;3(5):217-222.
3. Anuburani A, Manivannan K, Shakila A. Integrated nutrient and weed management on yield and yield parameters in brinjal (*Solanum melongena* L.) cv. Annamalai. Plant Archieves. 2003;3(1):85-88.
4. Chauhan DVS. Vegetable production in India. Agra, India; c1981.
5. Dixit PS, Prasad VM, Kasera S, Singh S. Effect of various organic inputs on growth and its attributes of tomato (*Solanum lycopersicum* L.) cv. GS600 under polyhose condition. IJCS. 2018;6(6):2537-2539.
6. Harikrishna BL, Channal HT, Hebsur NS, Dharmatti PR, Saragamath PA. Integrated nutrient management (INM) on availability of nutrients, uptake and yield of tomato. Karnataka Journal of Agricultural Science. 2002;15(2):275-278.
7. Ogundare SK, Babalola TS, Hinmikaiye AS, Oloniruha JA. Growth and fruit yield of tomato as influenced by

combined use of organic and inorganic fertilizer. European Journal of Agriculture and Forestry Research. 2015;3(3):48-56.

8. Patel, Catherine P. Comparative study on the effect of organic fertilizer pankavya and vermicompost on the yield of okra. Advances in Research. 2018;5(3):255-262.
9. Suge JK, Omunyin ME, Omami EN. Effect of organic and inorganic sources of fertilizer on growth, yield and fruit quality of eggplant (*Solanum melongena* L.) Archives of Applied Science Research. 2011;3(6):470-479.